

**NORTH CAROLINA DIVISION OF
AIR QUALITY**

Application Review

Issue Date:

Region: Washington Regional Office
County: Craven
NC Facility ID: 2500196
Inspector's Name: Kurt Tidd
Date of Last Inspection: 04/14/2020
Compliance Code: 3 / Compliance - inspection

<p align="center">Facility Data</p> <p>Applicant (Facility's Name): INGENCO Wholesale Power, LLC - New Bern</p> <p>Facility Address: INGENCO Wholesale Power, LLC - New Bern 7420 Old Highway 70 West New Bern, NC 28562</p> <p>SIC: 4931 / Elec & Other Services Combined NAICS: 221122 / Electric Power Distribution</p> <p>Facility Classification: Before: Title V After: Title V Fee Classification: Before: Title V After: Title V</p>				<p align="center">Permit Applicability (this application only)</p> <p>SIP: 02D .0516, 02D .0521, 02D .1111, 02Q .0317 NSPS: N/A NESHAP: MACT ZZZZ PSD: N/A PSD Avoidance: Yes NC Toxics: N/A 112(r): N/A Other: SB3 limits</p>																																																			
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<p>Review Engineer: Kurt Tidd</p> <p>Review Engineer's Signature: _____ Date: _____</p>					<p align="center">Comments / Recommendations:</p> <p>Issue 09616/T07 Permit Issue Date: _____ Permit Expiration Date: _____</p>																																																		

1. Purpose of Application

Ingenco Wholesale Power, LLC. (Ingenco) currently holds Title V Permit No. 09616/T06 with an expiration date of November 30, 2020 for a Landfill Gas to Energy facility in New Bern, Craven County, North Carolina. This permit application is for a permit renewal without modification. The renewal application was received on March 24, 2020, six months prior to the expiration date. Therefore, the existing permit shall not expire until the renewal permit has been issued or denied. All terms and conditions of the existing permit shall remain in effect until the renewal permit has been issued or denied.

2. Facility Description

The facility is permitted to operate twenty-four landfill gas/Diesel fuel-fired internal combustion engines with one generator for each engine. These Diesel fuel-fired truck engines were previously manufactured between 1996 and 1998 and have been refurbished to burn a combination of landfill gas and Diesel fuel. The engine/generator units are divided into four groups with six engine/generator units in each group. Each group of four exhausts into a common exhaust manifold with one stack (total of four stacks). Currently, the Ingenco facility generates electricity using eighteen engines divided into 3 groups of six: Groups A, B and C. Each six-pack vents to a common stack of which there are 3. The facility is permitted for an additional six-pack (Group D), but those engines have not been installed. The existing engines are dual fired with a combination of landfill gas (LFG) and Dyed Ultra Low Sulfur Diesel (ULSD). The gas is received from the Tuscarora Landfill located next to the Ingenco facility.

Ingenco is a TV facility specifically because emissions of CO exceed 100 tons per year.

3. Application Chronology/Compliance Status

December 21, 2015 – Title V Permit 09616T05 issued as a TV renewal.

June 5, 2018 – Title V Permit 09616T06 issued as an ownership change.

March 24, 2020 – Title V application 2500196.20A was received for the renewal of the current air permit without modification.

April 14, 2020 – WARO, Kurt Tidd, performed a Partial Compliance Evaluation.

July 22, 2020 – Draft renewed permit shared with TV Supervisor's for comment.

December 10, 2020 – Draft renewed permit and associated review shared with SSCB and Permittee prior to public notice and EPA review.

January XX, 2021 – Draft permit sent to 30-day public comment period and 45-day EPA review prior to issuance.

4. Permit Modifications/Changes and TVEE Discussion

The following table describes the modifications to the current permit as part of the renewal process.

Pages	Section	Description of Changes
--	Cover page and Throughout	Updated all dates and permit revision numbers.
--	Throughout	Update Regulations to 02D and 02Q
3	1.0 – Equipment Table	<ul style="list-style-type: none">• Revised emission description for the engines.• Removed the landfill gas cooler (ID No. ES-Cooler).
4	2.1 A – Regulations Table	<ul style="list-style-type: none">• Removed reference to NSPS IIII.
--	Throughout	<ul style="list-style-type: none">• Clarified/updated permitting language as necessary to match current shell conditions.
8-10	2.1 A.3 and 2.1 A.4	Section 2.1 A.4 rewritten to match condition Section 2.1 A.3.
8	2.1 A.5	Removed NSPS IIII conditions and updated GACT ZZZZ conditions.
8	2.1 A..6	Moved Section 2.3 to Section 2.1 A.6 and reformatted the condition. .
11	3.0 – General Conditions	Updated to General Conditions to most current version (V5.5 08/25/2020).
--	Throughout	All rule references now in capitols.

The following changes to the Title V Equipment Editor were made as part of this permit renewal:

- Revised the emission descriptions of the landfill gas/Diesel fuel oil-fired engine / generator units and changed the “MACT” label to “GACT.”
- Removed the landfill gas cooler (ID No. ES-Cooler).

5. Regulatory Review

15A NCAC 02D.0516 “Sulfur Dioxide Emissions from Combustion Sources”

Sulfur Dioxide emissions from the engines are limited to 2.3 lbs. per million Btu input. The engines are typically operated at 94% landfill gas fraction and consume approximately 1.5 gal/hr. of ULS. Ultra- low sulfur No. 2 ($\leq 0.0015\%$) is the only fuel oil that is now combusted. Combustion of fuel oil containing these low amounts of sulfur produces SO₂ emissions well below the limit. Landfill gas combustion (equivalent to natural gas combustion) produces negligible sulfur dioxide emissions. Continued compliance is expected.

15A NCAC 02D .0521: “Control of Visible Emissions”

These engines are subject to 02D .0521. No monitoring, reporting, or recordkeeping (MRR) is required when firing landfill gas or diesel fuel in these engines, as no visible emission are expected. Continued compliance is expected.

15A NCAC 02Q .0317 “Avoidance Conditions” for 02D .0530 “Prevention of Significant Deterioration”

Ingenco has accepted avoidance conditions limiting emissions of NO_x and CO from its engines, as shown in the following:

- Engine Nos. ES-A1 through ES-A6, ES-B1 through ES-B6
 - Less than 250 tons of NO_x per consecutive 12-month period
 - Less than 250 tons of CO per consecutive 12-month period
- Engine Nos. ES-C1 through ES-C6, ES-D1 through ES-D6 only)
 - Less than 250 tons of NO_x per consecutive 12-month period
 - Less than 250 tons of CO per consecutive 12-month period

The permit contains sufficient MRR to ensure compliance with these avoidance limits. Continued compliance is expected.

40 CFR Part 63, Subpart ZZZZ “RICE MACT”

The previous permit review and permit indicated NSPS IIII regulations applied to the facility. After discussion with Raleigh Central Office permitting staff and review of the Ingenco Apex permit review and permit, it was determined that the NSPS does not apply to this facility, but NESHAP ZZZZ does apply. This change has been reflected in the permit.

North Carolina General Statute G.S. 62-133.8(g) (State-Enforceable Only)

The permit currently includes the following emission limits and work practice requirements for SB3 Best Available Control Technology (BACT):

- CO emissions shall not exceed 4.0 grams per horsepower-hour (g/hp-hr),
- NO_x emissions shall not exceed 2.0 g/hp-hr, and
- PM₁₀/PM_{2.5}, SO₂, VOCs, Pb, and Hg shall be controlled from each engine using good combustion practices and the burning of landfill gas in the engine.

Ingenco must conduct inspection and maintenance of these engines to ensure compliance with the SB3 BACT limits. The facility must also conduct annual testing on groups of engines to demonstrate compliance. The most recent testing that has been reviewed was conducted on October 30, 2019, and compliance was demonstrated for Group A engines as shown in the table below:

Actual Generator Power Output/ (Gas Fraction)	Pollutant	EPA Method	Test Results	Emission Limit	Standard	Compliance
@ 284.9 kW each 81.4% of Max	NO _x	M7E	2.40 g/kW-hr	11.5 g/kW-hr	60 Subpart IIII	Yes
			1.79 g/HP-hr	2.00 g/HP-hr	SB3 BACT	Yes
			0.53 lb/mmBtu	N/A	PSD Reporting Emissions Factor	---
	CO	M10	3..38 g/KW-hr	14.3 g/KW-hr	60 Subpart IIII	Yes
			2.52 g/HP-hr	4.00 g/HP-hr	SB3 BACT	Yes
			0.75 lb/mmBtu	N/A	PSD Reporting Emissions Factor	---
<u>Notes:</u> <ul style="list-style-type: none">• mmBtu = millions of Btu• The results of the testing were approved by Gregg O’Neal of the Stationary Source Compliance Branch in a memorandum dated May 29, 2020						

6. NSPS, NESHAP/MACT, NSR/PSD, 112(r), CAM

NSPS

The landfill gas/diesel fuel oil-fired engines (ID Nos. ES-A1 through A6, ES-B1 through B6, ES-C1 through C6, ES-D1 through D6, and ES-E1 through E6) are dual-fuel fired engine/generators used to generate electricity by burning landfill gas and diesel fuel oil. The generators are “Detroit Diesel Series 60” (6-cylinder, 2.1 liter displacement each) engines with controllers optimized for the dual combustion of landfill gas and diesel fuel. Emissions from the engines are uncontrolled.

Per 40 CFR Part 60, Subpart IIII, “Standards of Performance for Stationary Compression Ignition (CI) Internal Combustion Engines,” a compression ignition engine is any engine that is not a spark ignition engine. As specified under the definition of spark ignition engines in 40 CFR 60.4219, dual-fuel engines in which a liquid fuel (typically diesel fuel) is used for CI and gaseous fuel (typically natural gas) is used as the primary fuel at an annual average ratio of less than 2 parts diesel fuel to 100 parts total fuel on an energy equivalent basis are spark ignition engines. The dual fired engines at INGenco do not operate above 98% energy from landfill gas. Optimum operating conditions will be when the engines operate within 92-96% gas fraction (4% to 8% No. 2 fuel oil firing). These engines operate with standard Detroit Diesel Series 60 injectors and cams, without spark plugs or other sparking devices, firing a minimum of 2% diesel fuel oil, and therefore, they are considered compression ignition engines under NSPS Subpart IIII.

Although the engines are considered to be CI engines under NSPS Subpart IIII, these engines do not meet the applicability requirements of this regulation. Per 40 CFR 60.4200(a)(2) – (4),

NSPS Subpart III is applicable to owners and operators of stationary CI internal combustion engines as specified in the following:

- (2) Owners and operators of stationary CI ICE that commence construction after July 11, 2005, where the stationary CI ICE are:
 - (i) Manufactured after April 1, 2006, and are not fire pump engines, or
 - (ii) Manufactured as a certified National Fire Protection Association (NFPA) fire pump engine after July 1, 2006.
- (3) Owners and operators of any stationary CI ICE that are modified or reconstructed after July 11, 2005 and any person that modifies or reconstructs any stationary CI ICE after July 11, 2005.
- (4) The provisions of §60.4208 of this subpart are applicable to all owners and operators of stationary CI ICE that commence construction after July 11, 2005.

The engines were manufactured between 1996 and 1998, with cylinder displacement less than 10 liters and were modified to burn landfill gas with optimum efficiency. However, the modification to allow firing of landfill gas does not meet the definition “modification” (i.e., no increase in emissions expected) or reconstruction under 40 CFR 60 Subpart A.

40 CFR 60.2

Modification means any physical change in, or change in the method of operation of, an existing facility which increases the amount of any air pollutant (to which a standard applies) emitted into the atmosphere by that facility or which results in the emission of any air pollutant (to which a standard applies) into the atmosphere not previously emitted.

40 CFR 60.15

- (b) Reconstruction means the replacement of components of an existing facility to such an extent that:
 - (1) The fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable entirely new facility, and
 - (2) It is technologically and economically feasible to meet the applicable standards set forth in this part

Because these engines were manufactured before 2006 and are not considered to be reconstructed or modified, these engines are not subject to NSPS Subpart III.

NESHAP/MACT/GACT

INGENCO was issued Air Permit No. 09616T05 on December 21, 2015 for twenty-four (24) landfill gas/No. 2 fuel oil-fired internal combustion engines (Nos A1-A6, B1-B6, C1-C6 and D1-D6 engines) with one generator for each engine located at the Tuscarora Landfill, in New Bern, Craven County, NC.

When the engines were originally permitted, all twenty-four engines (24) were considered new engines in accordance 40 CFR 63.6590(a)(2)(iii) under the RICE MACT because they were

fabricated on-site after June 12, 2006. The DAQ considered the on-site fabrication date of the engine the “construction” date for RICE MACT as specified in the preamble to the RICE MACT in Federal Register.¹

INGENCO is an area source of hazardous air pollutants (HAP). New engines located at an area source of HAP meet the requirements of the RICE MACT by meeting the requirements of NSPS Subpart IIII as specified in 40 CFR 63.6590(c). Although these engines are NOT applicable NSPS Subpart IIII because they were manufactured prior to the NSPS Subpart IIII trigger dates and were not reconstructed or modified, the not-to-exceed (NTE) limits listed in 40 CFR 40 CFR60.4212(d) for the in-use testing of pre-2007 engines were included in the permit. 40 CFR Part 63, Subpart ZZZZ (as revised in the January 18, 2008 Federal Register) does apply to these landfill gas/No. 2 fuel oil dual fuel-fired, compression ignition engines/generators (ID Nos. A1-A6, B1-B6, C1-C6 and D1-D6). The applicant stated in the application that they intended to install units that had been repaired/reconstructed that had been manufactured prior to 2000. These engines were generally manufactured in the mid to late 1990’s. The engines were repaired as required, including major rebuild, and the Detroit Diesel Engine Control Module (ECM) is replaced by an ECM designed by INGENCO. The INGENCO ECM is optimized for dual fuel operations at high ratios of energy from landfill gas to the total energy required to operate the engines. All of the units (Nos A1-A6, B1-B6, C1-C6 and D1-D6) in this modification will be considered “new reconstructed” under the RICE MACT for area sources because the final installation date (on-site installation) will be after June 12, 2006 [40 CFR §63.6590(a)(2)(iii)].

The final rule for this MACT (Subpart ZZZZ) was revised and re-published in the Federal Register on January 18, 2008 with an effective date of March 18, 2008 that included area sources. Per 40 CFR §63.6590(c), new or reconstructed generators that are located at an area source with a site rating of less than 500 hp, that combusts landfill gas equivalent to 10 percent or more for the gross heat input on an annual basis, can meet the requirements of the RICE MACT (Subpart ZZZZ)

Upon reevaluation, the DAQ considers the engines to be relocated to INGENCO, and relocating does not constitute commencing construction of the engines. Therefore, the engines were NOT constructed (only relocated) or reconstructed after June 12, 2006 and are considered existing engines under the RICE MACT.

The following is from Gregg O’Neal’s May 29, 2020 memo from the latest emission test.

“In addition the New Bern facility should look at the DAQ air permit review for INGENCO Wholesale Power, LLC – Apex, Air Permit No. 10198T05 which has similar engine/generators. In the review it indicates that based on manufacture date and that the engine/generators were not considered to be reconstructed or modified, the Apex engine/generators were determined to be not subject to 40 CFR 60 Subpart IIII. Thus the Apex engine/generators were corrected to be subject to 40 CFR 63 Subpart ZZZZ (Table 2d item 3 work practices).”

This conclusion was based on a review of the past permit reviews for both the New Bern and Apex facilities. Continued compliance is expected.

¹

The following information is from the 2011 permit renewal for the application of NSPS WWW and NESHAP AAAA.

Tuscarora Landfill owns the portion of the gas treatment system that compresses, filters (coalescing filter removing particles down to 0.3 microns) and dewateres (using a knockout pot) the landfill gas prior to the gas being sold to INGENCO, LLC (gas-to-energy facility). According to the US EPA, a knockout pot **is not** considered an adequate dewatering device. A proper dewatering device would lower the gas temperature and remove moisture from the gas. INGENCO Wholesale Power, LLC owns and operates a cooler to further dewater the gas to protect their generators and to help meet the NSPS compliance requirements for a landfill gas treatment system. Since neither of these two companies owns the entire treatment system, US EPA guidance states that both Tuscarora Landfill and INGENCO are responsible for NSPS compliance with Subpart WWW, §60.752(b)(iii) and NESHAP Subpart AAAA since they each own and control a portion of the landfill gas treatment system.

After discussion with DAQ RCO permitting staff it was determined the gas treatment systems (ID No. ES-Cooler) has no emissions and has been removed from the permit as part of this permit renewal.

NSR/PSD

INGENCO has accepted PSD avoidance conditions for CO and NO_x for its engines. Two separate conditions encompassing different sets of engines are represented in the permit. With these two avoidance conditions, the facility's potential emissions exceed the PSD major source threshold of 250 tons per year for both CO and NO_x, and therefore, the facility is considered a major source under PSD. The current permit includes the required monitoring, recordkeeping, and reporting conditions to ensure compliance with these limits. Continued compliance is expected.

112(r)

This facility is NOT subject to the requirements of the Chemical Accident Release Prevention Program, Section 112(r) of the Clean Air Act requirements because it does not store any of the regulated substances in quantities above applicability thresholds.

Compliance Assurance Monitoring (CAM)

Pursuant to 40 CFR 64.2, the provisions of the Compliance Assurance Monitoring (CAM) rule are applicable to emission units that meet all the following criteria:

Criteria #1: The unit is subject to an emission limitation AND uses a control device to achieve compliance with the limit;

Criteria #2: The unit has pre-control potential emissions that are equal to or greater than 100% of the amount (in tpy) required for a source to be classified as a major source; and,

Criteria #3: The unit is not exempt under 40 CFR 64.2(b).

The facility does not employ the use of any control devices, and therefore CAM is not applicable. No new control devices are being proposed in this permit renewal. Therefore, this permit renewal does not change this status.

7. Facility-Wide Air Toxics

The engines, which are subject to GACT Subpart ZZZZ, are exempt from NC air toxics under 15A NCAC 02Q .0702(a)(27). No changes are required under this permit renewal, and continued compliance is expected.

8. Facility Emission Review

There are no changes in potential emissions under this permit renewal. Actual emissions for 2015 through 2019 are reported in the header of this permit review.

9. Public Notice/EPA and Affected State(s) Review

A notice of the DRAFT Title V Permit shall be made pursuant to 15A NCAC 02Q .0521. The notice will provide for a 30-day comment period, with an opportunity for a public hearing. Consistent with 15A NCAC 02Q .0525, the EPA will have a concurrent 45-day review period. Copies of the public notice shall be sent to persons on the Title V mailing list and EPA. Pursuant to 15A NCAC 02Q .0522, a copy of each permit application, each proposed permit and each final permit shall be provided to EPA. Also, pursuant to 02Q .0522, a notice of the DRAFT Title V Permit shall be provided to each affected State at or before the time notice is provided to the public under 02Q .0521 above. There are no affected local or state programs within 50 miles of the facility.

10. Other Regulatory Considerations

An application fee was NOT required for this permit application.

A Professional Engineers Seal was NOT required for this permit application.

A zoning consistency determination was NOT required for this permit application.

A 30-day public notice and 45-day EPA review is required for this permit application.

11. Recommendations/Conclusion

Issue Permit 09616T07.